EXHIBIT N

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

DENSYS LTD.,

        Plaintiff,

    v.

3SHAPE TRIOS A/S and 3SHAPE A/S,

        Defendants.

Case No. 6:19-cv-00680-ADA

DECLARATION OF PARRIS EGBERT, PH.D. REGARDING U.S. PATENT NOS. 6,402,707 AND 9,222,768

I, Parris Egbert, Ph.D hereby declare as follows:

I.   BACKGROUND AND QUALIFICATIONS

1.   I have been retained by Defendants' 3Shape Trios A/S and 3Shape A/S (individually and collectively, "3Shape") to provide expert opinion and testimony in connection with the above captioned case. In particular, I have been asked by 3Shape to provide expert opinions with regards to the construction of certain claim terms in U.S. Patent Nos. 6,402,707 ("the '707 patent"), and 9,222,768 ("the '768 patent").

2.   My qualifications are set forth in my declaration in support of 3Shape's Opening Claim Construction Brief. (*See* Ex. E to Document 37 at ¶¶ 2-8.)

3.   My understanding of the legal standards applicable to claim construction is set forth in my declaration in support of 3Shape's Opening Claim Construction Brief. (*See* Ex. E to Document 37 at ¶¶ 9-10.)

4.   I have reviewed Densys's Opening Brief regarding claim construction. My review of this brief has not changed my opinion regarding how a person of ordinary skill in the

art (as defined in my previous Declaration) would have understood the terms in the '707 and

'768 patent. I am submitting this Declaration to explain why specific assertions in Densys's

Opening Brief regarding a person of ordinary skill in the art are unfounded.

II.   REBUTTAL DISCUSSION REGARDING SELECT TERMS OF THE '707 PATENT

A.   "a fixed global reference coordinate system" (claims 1, 37)

| 3Shape Proposed Construction	Densys Proposed Construction
a global coordinate system defined by the intra-oral fixed global registration position	Plain and ordinary meaning.

5.   I disagree with Densys's assertion that a POSITA would have understood the

words "fixed global reference" to simply refer to a "global" coordinate system. If this were the

case, I believe that the inventor would have simply used the "global coordinate system"

terminology, which is a commonly understood term of art as discussed in my previous

Declaration.

6.   In my opinion, a person of ordinary skill in the art would understand that "a fixed

global reference coordinate system" is a term coined by the inventor that does not have a plain

and ordinary meaning. I have not seen the terminology "fixed global reference" used to describe

a global coordinate system in the literature. The only other terminology that I have seen in the

art to refer to global coordinates is "world" coordinates. (*See, e.g.*, Ex. O,

3S_DENSYS_0002210; Ex. P, 3S_DENSYS_0003253; Ex. Q, 3S_DENSYS_0004176-77.) If

the patentee had used the term "world coordinates" to refer to the concept of "global

coordinates" I could see an argument about those terms being interchangeable. However, the

patentee did not use that language, and therefore, I do not agree that a person of ordinary skill in

the art would have understood "a fixed global reference coordinate system" is merely a "global"

coordinate system as Densys seems to suggest. Instead, a person of ordinary skill in the art

would have recognized that the inventor has added specific terms ("fixed" and "reference") to convey a specific meaning.

7.   To understand the meaning of "fixed" and "reference" I think that a person of ordinary skill in the art would have: (a) looked at the context of how "fixed" and "reference" are used in the claims; and (b) considered how the terms "fixed" and "reference" are used throughout the specification.

8.   In the '707 patent, the focus of the invention seems to be on establishing the "an intra-oral fixed global registration position" so that subsequent measurement and images can be registered together using this fixed position as a reference point. (*See e.g.*, '707 Patent, cls. 1 and 37, Abstract, 10:15-28, 11:21-52, 12:17-40, 23:48-24:21.) Indeed, the concept of defining the IOFGRP as a fixed position that is used as a reference point is reflected in both Densys's and 3Shape's proposed constructions of IOFGRP. Furthermore, as explained in my previous Declaration, FIG. 1 and the accompanying discussion is particularly informative showing that the "fixed global reference coordinate system" is defined by the intra-oral fixed global registration position:
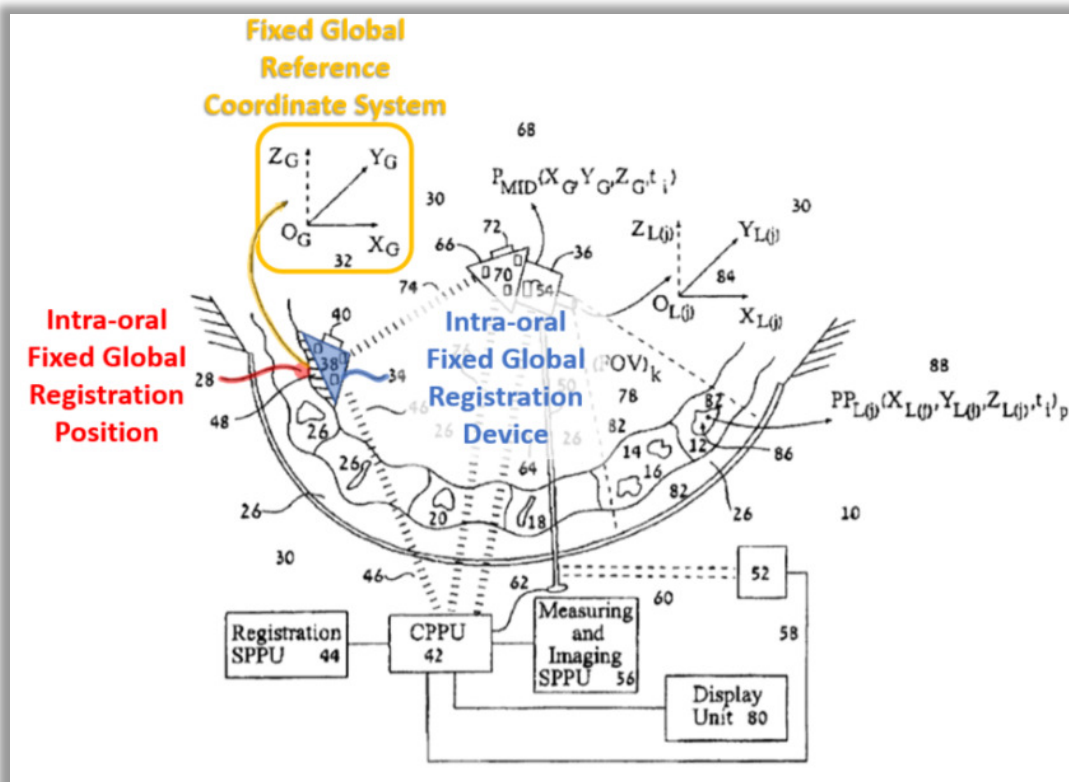
('707 Patent, FIG. 1 (annotation added).) It is clear from the teachings of the specification that

the terms "fixed" and "reference" are referring to the IOFGRP.

9.   In sum, I believe that the reduction of "fixed global reference" to simply "global"

in Densys's Opening Brief does not reflect how a person of ordinary skill in the art would have

understood this term.

B.   "(f) registering local coordinate space pixel positions in each of said plurality of globally recorded three-dimensional measurements and images with corresponding global coordinate space pixel position" (claim 1)

3Shape Proposed Construction	Densys Proposed Construction
(f) after step (e), registering local coordinate space pixel positions in each of said plurality of globally recorded three-dimensional measurements and images with corresponding global coordinate space pixel position	Plain and ordinary meaning.

10.   I disagree with Densys's assertion that a disclosure of "real-time" registration

means that the registration is simultaneous with image acquisition. Specifically, I believe that

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Densys's Opening Brief does not reflect the same understanding of "real-time" that a person of ordinary skill in the art would have had.

11.   A person of ordinary skill in the art, having read the '707 patent, would have understood that "real-time" means that the image acquisition and registration is happening in "real-time" as perceived by the dental practitioner and patient. In other words, as the image acquisition process occurs, the physical object is virtually represented to the patient and/or to the dentist at the same time (*i.e.*, as perceived by the user; but not actually "simultaneous," as discussed below) or relatively close to the same time. I believe the inventor uses "real-time" as a contrast to the registration techniques discussed in the background of the patent, where the transformations require a more significant amount of time, delaying the rendering of the virtual model.

12.   A person of ordinary skill with work experience in 3D imaging and modeling, however, would have readily appreciated that "real-time" image acquisition and rendering does *not* mean that the image acquisition and rendering are actually "simultaneous" as Densys suggests. Known prior art 3D image rendering techniques involve the use of an imaging sensor and a processor to render the data collected by the image sensor. Even though image rendering may occur in "real-time" as perceived by the user, there is still of course a sequence required. For example, the following sequence may reflect, in general terms, the image rendering process:

> i) a light source is projected onto an object,
>
> ii) image sensors capture scan data from the illuminated object,
>
> iii) a processor operatively connected to computer instructions processes the scan
>   data to generate a point cloud, and

iv) the processor operatively connected to computer instructions triangulates the

point cloud into a 3D mesh and causes the mesh to be displayed (rendered) to

the user.

13.   While the 3D mesh may be rendered on the display "in real-time" with the image

acquisition, this is no way means that steps do (or even can) occur *simultaneously*.

Contrastingly, a specific order is necessarily required – e.g., first the light must be emitted, then

the image sensor must collect the data, then the processor must generate a point cloud from the

collected data, and then the processor must perform triangulation on the point cloud and then

output the 3D triangulated mesh so that it can be displayed.

14.   Densys seems to glaringly neglect that software processing involve millions (or

billions) of instructions performed in rapid succession every second so that the image rendering

can be visually displayed in "real-time" with the image acquisition. But "real-time" image

rendering still requires performing steps in a certain sequence as I have laid out above.

15.   Therefore, I believe that Densys's assertion that "real-time" means that method

steps do not require an order is entirely unfounded and is inconsistent with how a person of

ordinary skill in the art would have understood "real-time."

C.   "a measuring and imaging device (for measuring and imaging the intra-oral objects and features)" (claims 1, 16-19, 21-24, 32, 37, 52, 55, 57, 59, 60)

3Shape Proposed Construction	Densys Proposed Construction
This term is subject to 35 U.S.C. §112 ¶6. **Function:** measuring and imaging the intra-oral objects and features **Means:** Indefinite under 35 U.S.C. §112 ¶2. The specification fails to provide sufficient structure for performing the function of measuring and imaging the intra-oral objects and features.	Plain and ordinary meaning.

16.   Densys contends in its brief that the "position and orientation guide" recited in

claim 17 and described in the specification of the '707 Patent provides corresponding structure

for the measuring and imaging device. I disagree. The position and orientation guide is merely

used as a handle or rod to move the position of the measuring and imaging device, and does not

perform the claimed function of measuring and imaging of intra-oral objects. (*See* Ex. A at

15:31-51.) In fact, the specification notes that the position and orientation guide is for

performing the function of "three-dimensional maneuvering or guiding, positioning, and

orienting measuring and imaging device 36 throughout global coordinate space 30, typically, but

not limited to, inside oral cavity 26 of the dental patient." (*Id.* at 15:31-35.) This described

functionality does not perform the function of measuring and imaging intra-oral objects.

III.   REBUTTAL DISCUSSION REGARDING SELECT TERMS OF THE '768 PATENT

A.   "sector" (Claims 1, 6, 16)

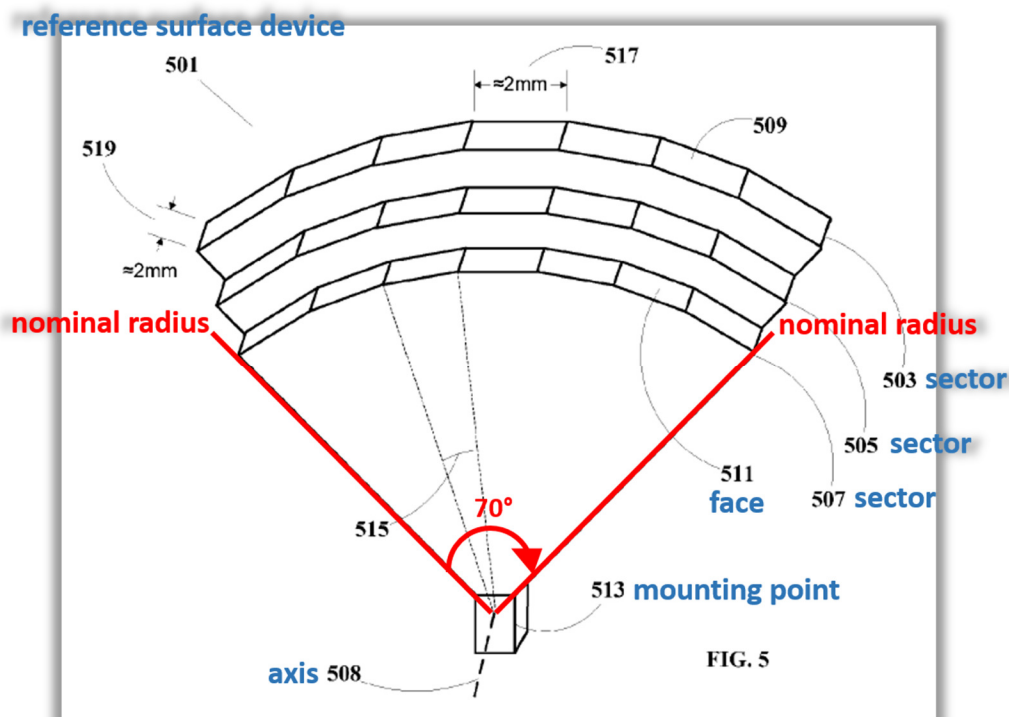| 3Shape Proposed Construction	Densys Proposed Construction
region defined by two radii at a given angle to each other	Plain and ordinary meaning

17.   I disagree with Densys's assertion that 3Shape's proposed construction would

import limitations from claim 17 into claim 1 and would render claim 17 superfluous. In my

opinion, 3Shape's construction has a broader scope than the usage of the term in claim 17

because it allows for a sector with edges that do not taper inward from the first and second end.

For example, 3Shape's proposed construction allows for a sector with its radii separated by 180°.

In such an example (as shown in the next paragraph), the edges of the sector would not taper

inward from the first end to second end. Instead, edges would run parallel to each other.

Compare Ex. B, FIG. 5 (annotated below).

18.   Example of a sector with its radii separated by 180°:
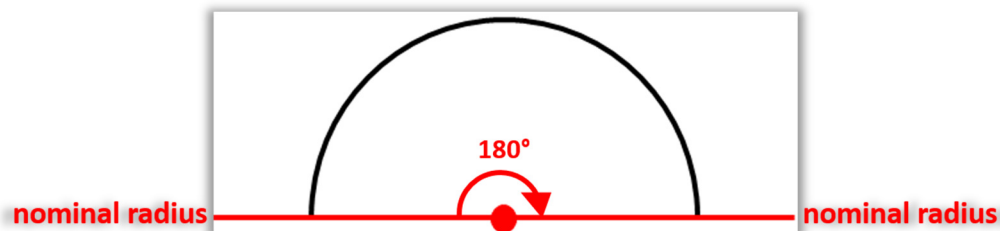
As shown above, the radii do not taper inward, but are parallel together along a straight line.

This is in contrast to radii that do taper inward, as shown, for example, in FIG. 5:
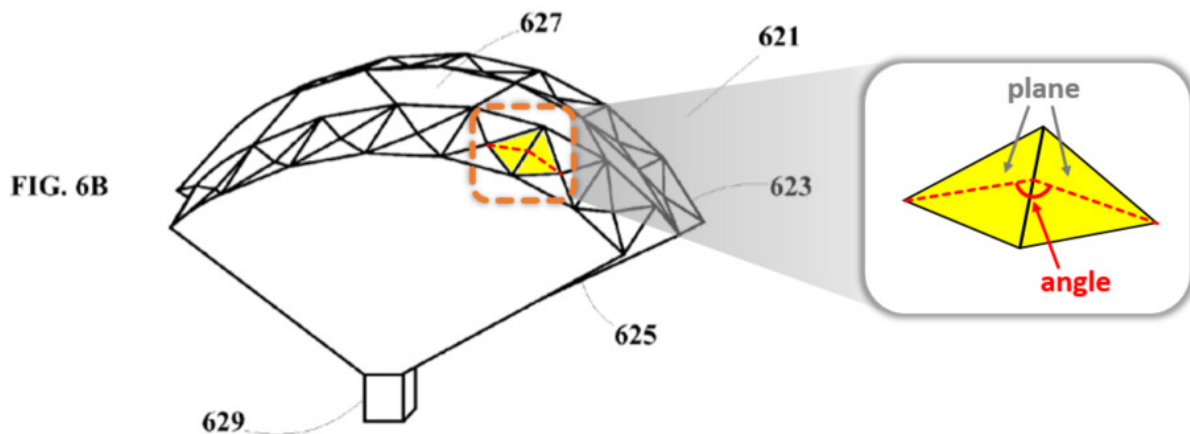

FIG. 5

19.   In my opinion, the construction Densys proposes in its Opening Brief does not

reflect how a person of ordinary skill in the art would have understood this term.

B.   **"a plurality of faces" (Claims 1, 7, 8, 11) and "each face of said plurality of faces at an angular orientation with respect to each adjacent face" (Claim 1)**

Term	3Shape Proposed Construction	Densys Proposed Construction
a plurality of faces	more than one substantially plane surface	Plain and ordinary meaning
each face of said plurality of faces at an angular orientation with	each substantially plane surface at an angular orientation relative to an	Plain and ordinary meaning

respect to each adjacent face	adjacent substantially plane surface	

20.   I disagree with Densys's assertion that 3Shape's proposed constructions conflict with the embodiments of reference surface devices including pyramidal depressions depicted in FIGS. 6A and 6B. To the contrary, I believe the pyramidal features shown in FIGS. 6A and 6B confirm 3Shape's constructions because each side of a pyramid is a substantially plane surface and is also at an angular orientation with respect to each adjacent face. In particular, each of the faces of the pyramid is flat and allows it to be oriented at an angle to neighboring pyramids. This is illustrated, for example below:
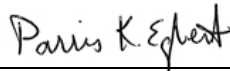

As shown above, the adjacent sides of the depressed pyramids are planar and as such have an angle along their adjacent edge.

21.   In my opinion, the construction Densys proposes in its Opening Brief does not reflect how a person of ordinary skill in the art would have understood this term.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: July 23, 2020

Parris K. Egbert
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    Parris Egbert, Ph.D.